



MEMO

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TO: Environmental Public Health Specialist Vs
Local Public Health Agencies and other Agencies with interest in On-Site Sewage
Authorized On-Site Soil Evaluators

FROM: Scott A. Clardy, Administrator
Section for Environmental Public Health

SUBJECT: Requirements for Site/Soil Evaluations

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Soil morphology evaluations and percolation tests are the basis of on-site system selection and design. Inconsistent or deficient evaluations and reports can lead to poor siting and design and can increase the potential for early system failure. Conversely, consistent and accurate evaluations and reports are essential for good design and regulatory decisions. Site evaluations performed and interpreted according to the requirements of the Minimum Construction Standards should result in sound system design.

The use of percolation tests or soil morphology evaluations is discussed in 19 CSR 20-3.060(2)(D) where it states, "The administrative authority will determine which method(s) is to be used." Further, the administrative authority's responsibility is to review construction permit applications, including site/soil evaluations and system design for compliance with the standards. **When a percolation test or soil morphology report is insufficient for system design or to determine compliance, the administrative authority is not obligated to, and should not, accept the report or approve the application.** Do not hesitate to question or seek clarification from the site evaluator. If deficient reports are repeatedly submitted, please forward them to the Section for Environmental Public Health on-site sewage program for consideration. Requirements for site/soil evaluations are detailed in sections (2) and (7) of 19 CSR 20-3.060 and are summarized below.

The ten items that must be evaluated for all proposed sites can be found in 19 CSR 20-3.060(2) Site Evaluations. The first item states that either a percolation test or a description of the soil conditions as determined by a soil morphology is required. A further requirement is that a pit be dug for all new installations if a soil morphology evaluation is conducted. In general, sites cannot be satisfactorily evaluated from one pit. It is the responsibility of the soil evaluator to observe additional pits or make supplemental probings as necessary to adequately evaluate the site and soil. Please refer to 19 CSR 20-3.060(2)(A) 2 through 10 for the other nine items, which

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should be self-explanatory, however, some items are commonly omitted from evaluation reports. Items that are often omitted include evaluation of the required setback distances, the amount of available area and an area for replacement, the location of easements, the location of the home, and other features that can influence surface and subsurface water flow. To accurately record these items, a legible site diagram is necessary.

Percolation test procedures are found in subsection (2)(D) of the Minimum Construction Standards. Items of particular importance are that proper procedures were followed including the saturation and swelling procedure, an adequate site sketch is provided, the calculations are shown and the percolation rate for each hole stabilized, and the depth to bedrock or other restrictive layer is determined. Deficient reports should not be accepted.

Soils morphology evaluations must be performed according to the standards detailed in section (7) of the Minimum Construction Standards, in addition to evaluating the nine items from section (2). The Authorized On-site Soil Evaluator is responsible for determining the number and location of soils observations necessary. A site evaluation report must have a sketch showing locations of items as required by section (2) and the location and size of area evaluated. It is not acceptable to simply give the location of the pit or pits. Subsection (7)(C) lists six site factors which must be evaluated and classified by the Authorized On-Site Soil Evaluator as suitable, provisionally suitable, or unsuitable. The criteria for soil morphology site evaluation and classification can be found in subsections (E) through (L). The suitability classifications relate to conventional on-site systems. When the evaluation notes seasonal high water table or other drainage limitations, the soil evaluator is expected to make recommendations related to the possible use and effectiveness of an interceptor drain or other measures to deal with the drainage limitations and meet vertical separation requirements, which are discussed in sections 5.3 and 5.4 of the Environmental Health Operational Guidelines.

The evaluator must determine a soil loading rate for each horizon; a loading rate range is not acceptable. Each horizon which is not classified as unsuitable due to texture, structure or fragipan, etc., must be assigned a conventional loading rate based on Table 13. Except for unsuitable horizons, an alternative system soil loading rate based on Table 14 must also be reported for each horizon to a depth of at least 12 inches below the likely depth of an alternative system (to about 24 or 30 inches). When high shrink/swell group IVb soils are present, the evaluator should recommend a drip system loading rate to be used if a drip irrigation system is designed.

Other than proper classification of the site suitability for a conventional system, the evaluator is not expected to make system recommendations. A system designer is not obligated to follow any specific system recommendations by the soil evaluator, provided the system type and proposed design comply with construction standards. However, if the evaluator makes specific system recommendations or otherwise assists with the system design, those recommendations and the design must be reviewed for compliance with the Minimum Construction Standards, just as with any other application and plan review.

Deficient soil morphology site evaluation reports should not be accepted. If an evaluator's soil morphology site evaluation reports routinely lack required information, a standard report form is available and you may require its use. These forms are available, from the on-site sewage program, and soon you will be able to download these forms from pages linked to the on-site sewage program's website at: <http://www.dhss.state.mo.us/SEPH/sewage/index.html>.